Supplementary Information

TABLE 1

	rock type†	Al_2O_3	Mg/(Mg+Fe)	Re (ppb)	Os (ppb)	$^{187}Re/^{188}Os$	$^{187}Os/^{188}Os$	T_{MA}‡	T_{RD}‡
Mojavia (Cima)									
Ki5-16	Sp harz	0.68	0.911	0.027	1.35	0.10	0.1120 ± 3	3.13	2.42
Ki5-32	Sp harz	2.60	0.906	0.079	1.42	0.26	0.1237 ± 4	1.97	0.75
Duplicate				0.084	1.66	0.24			
Ki5-110	Sp harz	1.90	0.911	0.021	1.54	0.07	0.1180 ± 2	1.86	1.57
Ki5-139	Pl lherz	3.97	0.891	0.073	1.08	0.32	0.1288 ± 4	0.13	0.03
Duplicate				0.065	1.36	0.23			
Ki5-45	Sp harz	1.59	0.902	0.063	1.04	0.29	0.1230 ± 5	2.63	0.86
CiP98-8	Sp harz	2.03	0.909	0.067	1.17	0.27	0.1235 ± 4	2.16	0.78
Ki5-8	Sp harz	1.70	0.906	0.229					
CiP98-64	Sp harz	1.61	0.908	0.074	1.65	0.21	0.1225 ± 6	1.84	0.92
Ki5-32	Sp harz	2.59	0.903	0.136	2.03	0.32	0.1228 ± 2	3.46	0.87
Colorado Plateau									
Col Plat 120	Gt harz	0.53	0.919	0.025	4.85	0.02	0.1176 ± 2	1.71	1.61
Col Plat 126	Gt harz	0.54	0.915	0.015	2.72	0.03	0.1166 ± 3	1.87	1.75
Col Plat C713	Gt harz			0.023	2.24	0.05	0.1213 ± 3	1.23	1.09
Col Plat 105	Gt harz	1.21	0.921	0.251	5.10	0.23	0.1192 ± 3	3.10	1.40
Col Plat 104‡	Gt harz	0.54	0.918	0.258	6.51	0.19	0.1195 ± 3	2.42	1.35

†sp harz (spinel harz), gt harz (garnet harzburgite), pl lherz (plagioclase lherzolite), cpx (clinopyroxene); Mg#=Mg/(Mg+Fe); ‡ T_{MA} refer to model ages calculated by assuming $^{187}Os/^{188}Os$ of primitive upper mantle is presently 0.129 and $^{187}Re/^{188}Os$ = 0.423 (note that due to problems of late stage Re mobility, T_{MA}'s are likely to represent maximum ages) and T_{RD} refers to Re-depletion model ages calculated assuming $^{187}Re/^{188}Os$ = 0 (therefore they represent minimum model ages); except for Col Plat 104, Re and Os measured on same aliquots; whole-rock powders were made in a metal-free environment using an alumina grinding mill. Samples (1 g aliquots) were simultaneously spiked with ^{190}Os and ^{185}Re tracers; dissolution/spike-sample equilibration were achieved in sealed glass tubes; Os was separated and purified using solvent extraction and microdistillation, and analyzed by negative thermal ionization (Harvard Finnigan Mat 262) using $Ba(OH)_2$ as emission enhancers on Pt filaments (233/236<0.00001); measured ratios were corrected for oxides ($^{17}O/^{16}O$=0.0003708, $^{18}O/^{16}O$=0.002045) and for mass discrimination (exponential law); Re was separated by anion-exchange and analyzed by inductively coupled plasma mass spectrometry; Os and Re process blanks were <3 pg and <6 pg, respectively; external reproducibility of $^{187}Os/^{188}Os$ for 1 ng standard was 3 per mil over course of study.